

MEETING MINUTES (FINAL)

CITY OF TUCSON HABITAT CONSERVATION PLANS (HCPs)

Technical Advisory Committee (TAC)

Wednesday, April 29, 2009, 1:00 – 4:00 p.m.

U.S. Fish & Wildlife Service, Tucson Field Office

201 North Bonita Avenue, Suite 141

Tucson, Arizona 85745

ATTENDEES

City of Tucson (COT) Habitat Conservation Plans (HCPs) Technical Advisory Committee (TAC) members present:

Dennis Abbate (Arizona Game and Fish Department – Research Branch)

Marit Alanen (U.S. Fish and Wildlife Service)

Rich Glinski (Arizona Game and Fish Department – *retired*)

Trevor Hare (Coalition for Sonoran Desert Protection)

Ries Lindley (City of Tucson – Tucson Water Department)

Guy McPherson (University of Arizona – School of Natural Resources)

E. Linwood Smith (EPG, Inc.)

Other Attendees present:

Ann Audrey (City of Tucson – Office of Conservation and Sustainable Development)

Amanda Best (Westland Resources)

Jamie Brown (City of Tucson – Office of Conservation and Sustainable Development)

Locana de Souza (Arizona Game and Fish Department)

Orlanthia Henderson (Town of Sahuarita)

David Jacobs (Arizona State Land Department / Arizona Attorney General's Office)

Leslie Liberti (City of Tucson – Office of Conservation and Sustainable Development)

Nicole Urban-Lopez (City of Tucson – Office of Conservation and Sustainable Development)

1. Welcome, introductions, and ground rules

Jamie reminded the group that, per Technical Advisory Committee (TAC) member request, non-TAC members can add their comments to the discussion during the Call to the Audience.

2. Review 4/1/09 TAC meeting minutes

Technical Advisory Committee (TAC) members approved the April 1, 2009 minutes with edits from Rich, David, and Trevor. In his comments, Rich asked for clarification on how Pima Pineapple Cactus (PPC), as a federally endangered plant, is protected on private property. Trevor said that he thinks the City of Tucson's (COT's) Native Plant Preservation Ordinance (NPPO) is the only protection mechanism unless there is federal nexus. He added that all of the lands have a federal nexus because of the Clean Water Act, but this may change. Dennis said that if these

plants are to be removed from the property, they must have a permit from the Arizona Department of Agriculture.

3. Updates

Avra Valley Habitat Conservation Plan National Environmental Policy Act (NEPA) process

Jamie reported that on the evening of Thursday, April 16, the COT, in partnership with the U.S. Fish and Wildlife Service (USFWS), hosted a public open house for the proposed Avra Valley Habitat Conservation Plan (HCP). Three people attended along with one COT Council Aide. Jamie said that the comment period will end on May 18 and that one written comment had been received thus far.

Cactus Ferruginous Pygmy-owl (CFPO) captive breeding

Dennis reported that the AGFD-sponsored CFPO captive breeding program, which is occurring at Wild at Heart's facilities in the Phoenix area, is still considered to be in its infancy. He said that there are currently four breeding CFPO pairs and that the breeding season is in full swing. Sam Fox, of Wild at Heart, told Dennis that they recently had two hatchlings from one pair. He added that all four CFPO pairs were either on eggs or had very recently hatched young. Dennis said that the project is only a feasibility study and that there are no plans to reintroduce CFPO in the near future. He added that even if all CFPO pairs fledge young, all CFPO will remain in captivity and the program will continue next year.

Trevor asked if there is a target number of CFPO that the group is trying to achieve before beginning the release. Dennis said that there were several numbers thrown around and that, at one time, someone suggested 25 breeding pairs. He said that the Arizona Game and Fish Department (AGFD) and Wild at Heart are being very cautious. There are some concerns about the genetics. All CFPO in captivity were captured in Arizona and they felt strongly that all of those genes should be harvested. He said that AGFD captured the last known CFPO in northwest Tucson/Marana in 2006 and that CFPO is still alive and still breeding. Dennis said that there has been some discussion about going to Mexico and trying to bring some CFPO into the U.S. for the program, but that would be a lengthy process involving quarantine.

Dennis said that he wanted to emphasize that the program is just a feasibility look at the process as a potential strategy for conservation of the species. They do not know yet if this is the appropriate tool for conservation and they do not know if their effort will be expanded and utilized in the future. He said he thinks that AGFD would like to go in that direction, but that all depends on logistics, politics, and biology.

Trevor asked if there is a finish date for the feasibility study and whether that goes out for public review and NEPA compliance. Dennis said that they do not have a set date to complete the feasibility study. They want to know if they can be effective in producing young, if these captive-bred CPFO are going to be healthy, and how many can be produced during any one breeding season.

Trevor asked if there is room to house 25 breeding CFPO pairs at Wild at Heart. Dennis said not at present but that there is room to house considerably more than they have now. He said that

there is talk of Wild at Heart expanding. He said that Wild at Heart is cutting back on their rehabilitation efforts and getting more into the kind of work surrounding this CFPO breeding program. If they continue to shrink the wildlife rehabilitation side of their operation, that may free up space for more CFPO. Dennis said that Wild at Heart is still very involved in Burrowing Owl relocation and that Bob Fox is the only person licensed in Arizona to do this.

Rich asked if there is any interest in involving the Phoenix Zoo. Dennis said that if this program expands, there is interest in exploring partnerships with other entities so that not all of the CFPO are in one place should there be a catastrophic event.

Climate Change Committee

Leslie reported that the first COT Climate Change Committee meeting will take place on April 30. The Committee is tasked with directing the development of a Climate Change Mitigation and Adaptation Plan. Information will be posted on the OCSD website as it is developed. Examples of members include Jonathan Overpeck, Pat Patton, and John Schwartz.

4. Discussion:

Proposed Town of Sahuarita annexation adjacent to Greater Southlands HCP Planning Area (Orlanthia Henderson)

Orlanthia distributed handouts of several Powerpoint slides with maps. She said that in 2008, the Town of Sahuarita (Sahuarita) had eight General Plan amendments. Two were implemented or proposed by Sahuarita itself. The Sahuarita Town Council approved all eight amendments. The larger General Plan amendment – “Amendment 4” – includes the 16 sections of Arizona State Land Department (ASLD)-owned land adjacent to the City’s Greater Southlands HCP Planning Area. General Plan Amendment 4 is in between the Sahuarita and COT limits and is often considered “Sahuarita East.” It has not yet been annexed into Sahuarita. She said that the Sahuarita Manager’s Office is working with the Arizona State Land Department (ASLD) on that. She said that, because these negotiations are taking place in the Manager’s Office, she is not aware of the timeline.

Trevor asked if there was a reason why the proposed annexation only touches a corner of the existing Sahuarita limits. She said that there are non-ASLD property owners in between and Sahuarita is in discussion with these owners about annexation. She added that, for General Plan Amendments, the proposed annexation limits do not have to be contiguous with existing limits. The amendment allows Sahuarita to move forward with designating land use and, eventually, they will look at zoning once the amendments are approved. Orlanthia displayed a slide on a handout indicating the land use categories that were approved. She said that the most intense land uses are planned for the Wilmot and Sahuarita Road corridors. She added that there is a tiny square of land at the top, which is meant to connect to a possible future extension of Swan Road. There has been no specific planning for this 16-section area and there is no expectation for any building prior to 10 years from now.

Orlanthia showed a list of the zoning categories that would be allowed under the approved land uses. Sahuarita adopted Pima County's zoning code in 1996 and, since then, there have been updates.

Trevor asked about the categories of "low" and "medium" and the residences per acre allowed by these. Orlanthia said that she wasn't sure what the minimum lot size is. Marit asked if Sahuarita has any plans to annex lands south of the 16-section amendment. Orlanthia said that those lands are not owned by ASLD and so Sahuarita is not currently considering those lands.

With regard to Pima County's Lee Moore Wash Basin Management Study, Orlanthia said that Sahuarita staff members have been involved in the process and have seen the floodplain and flow corridor maps. She said that Sahuarita employees have been working to address those constraints. Recently, Sahuarita became its own floodplain manager instead of Pima County managing floodplains within the Sahuarita limits. Trevor said that it would be helpful to hear more about Sahuarita's floodplain management because the COT has interest in protecting washes and wash corridors adjacent to this General Plan Amendment area. He added that what Sahuarita plans to do may make moot some of the concepts the TAC has proposed.

Jamie asked if the land use categories were influenced by Pima Association of Government's 2006 Southeast Area Arterial Study and Orlanthia said yes. Dennis asked if there is any reason why Sahuarita would not move forward with this annexation. Orlanthia said that her impression is that Sahuarita Council members were encouraging staff to move forward, however, this could change after the upcoming Sahuarita Council elections. She said that Sahuarita is growing very quickly and the Council is looking twenty to thirty years into the future in terms of possible growth areas. With this annexation, Sahuarita would double in size.

Jamie asked if this 16-section General Plan Amendment had been officially approved by ASLD. David said that it has not gone through the entire State approval process because the Urban Land Planning Oversight Committee does not currently exist and, therefore, cannot approve it.

Orlanthia said that the Sahuarita Planning Department's goal is to get specific plans in place for these 16 sections. These specific plans would include trail systems, open space requirements, parks and recreation. She said that perhaps the Lee Moore Study development criteria will come into play at this level. In general, Orlanthia said that the planning for this 16-section area is very preliminary at this point.

Dennis asked how aware Sahuarita's Planning Department is in terms of Pima County's Multi-species Conservation Plan or the COT's HCP efforts. Orlanthia said that there are a few committees that Sahuarita staff members regularly attend, including Pima Association of Government's Environmental Planning Advisory Committee and the COT's Resource Planning Advisory Committee (RPAC). Information from these meetings is passed along to the Planning Director who communicates with the Sahuarita Town Manager. She said that Sahuarita staff members are aware of the different studies and, as an RPAC member, she had an opportunity to review the COT's February '08 Preliminary Draft Greater Southlands HCP.

Rich asked if there is potential for Sahuarita to get involved in developing an HCP. Orlanthia said not at this time because it would require additional staff members. She said that Sahuarita is only about 15 years old, making it relatively new. Therefore, staff are focusing on the “nuts and bolts” and are in the infancy stages of many planning efforts. Rich asked about roadway corridors that may be coordinated between entities. Leslie said that this would be the Southeast Area Arterial Study. Orlanthia said that the bypass corridor alignment as part of the Southeast Area Arterial Study had been shifted and continues to shift based on community reactions.

Trevor said that he thinks that the TAC should consider specific questions for Sahuarita floodplain staff.

Update on Resource Planning Advisory Committee development of a revised City watercourse protection ordinance (Ann Audrey)

and

Riparian habitat protection as part of the Greater Southlands HCP

Ann said that the Resource Planning Advisory Committee (RPAC) began meeting about 15 months ago and is composed of representatives from the building and development community as well as the environmental community. The intent is to serve as a sounding board for environmental issues within the COT. One of their tasks involves revision of the watercourse protection ordinances.

Ann said that there are three general wash categories within the COT, including channelized washes that are dirt, trapezoidal or concrete-lined washes. These are typical of the denser areas of the COT established in the 1950s, 1960s, and 1970s before there was a lot of wash protection occurring. Ann said that natural channels tend to be located on the urban fringe and maintain their natural flow characteristics. They may also be “hemmed in” a little by development in terms of encroachment into the floodplain, but the vegetation canopy is still intact. There are also sheetflow areas that, particularly in the eastern portions of the COT, have Tobosa (*Hilaria mutica*) grass vegetation patterns. She said that Frank Sousa, former hydrologist for the COT, mapped Tobosa swales based on aerial orthoimagery.

Ann said that each of these wash types have their own problems. The channelized, urban washes were sized, decades ago, for a certain flow capacity. And, as changes occur to the washes (e.g., new vegetation established; downcutting and erosion occur), the capacity might get bigger or smaller, but they generally have to be managed in a way that they maintain the capacity for the 100-year flood event. Possible climate change outcomes and increases in hardscape within the watershed are also factors that influence channel capacity. So, even though there is a desire by some to revegetate or daylight culverts along some of these urban washes, the COT must consider conveyance capacity.

Trevor asked if annual or shrub vegetation reduces conveyance capacity very much. He said that COT staff or contractors come into Arroyo Chico and remove toad habitats every year. They remove all the vegetation in the channel. Ann said that the maintenance crews do not have

continuity and there is very limited money available for wash maintenance. So, the impulse is to remove all vegetation so that there will be a longer period of time before additional maintenance is needed. In terms of Arroyo Chico, neighbors have intervened and have done their own maintenance at their own expense. She added that there are watercourse maintenance guidelines that she hopes will be finalized and adopted in the coming months. Nevertheless, there are urban washes where shrubs will be seen as decreasing conveyance capacity. Overall, Ann said that wash maintenance could be improved, COT personnel are aware of improvement areas, and are working to address concerns.

Ann said that as buffelgrass and Johnson grass and other fire tolerant grass species encroach into washes, there is a greater propensity for burning, which is a safety concern. Also, homeless people often live in washes and so the Tucson Fire Department or Tucson Police Department may call the Transportation Department requesting that vegetation be removed for safety reasons. The safety function, which is the primary function of the COT, trumps habitat protection. Mosquitos are being dealt with more effectively every year as the response gets more habitual. However, there are parts of washes where there has been scouring and water stands after rainfall events. Once the COT has been alerted to areas of standing water, Transportation Department personnel place BTI (*Bacillus thuringiensis israelensis*) into these waters.

In terms of stormwater quality and urban flooding issues, Ann said that there are washes that actually follow the middle of streets. These were deliberately constructed this way. In terms of stormwater quality, the COT prepares National Pollutant Discharge Elimination System permit applications for discharges to waters of the United States. As part of this, Best Management Practices to treat stormwater are described and the adoption of the COT's water harvesting manual is viewed as a Best Management Practice for stormwater quality treatment.

Cleanwater scour is a product of upstream hardscape, which delivers fast moving, relatively sediment free runoff. When this runoff discharges into watercourse channels, erosion occurs. There are areas in the COT where pipelines that were once buried are now suspended above ground because of this erosion. Ann said that there is not only a water balance in washes, there is also a sediment balance that must be considered. Prior to development impacts, sediment was balanced naturally as new sediment was conveyed downstream and deposited. This replaced sediment that was picked up during flood flows and distributed along the Santa Cruz River. Sediment balance has been completely disrupted by urban hardscape. This is a very difficult issue to solve.

Ann said that the reason she wanted to raise these issues is because, as the lands within the Lee Moore Wash Basin Management Study (hereinafter "Lee Moore Study") are developed, if these issues are raised ahead of time, there will be better ways to address them. Ironically, sediment is viewed as a pollutant in terms of discharges to waters of the United States, which is why one sees those "straw sausages" around construction sites. These are intended to stop the flow of sediment off-site.

Other wash-related issues include loss of the meso- and hydro- riparian species and introduction of invasive species and naturalized species. Ann referred to a photograph of a Tobosa swale and another photo showing how easily these can degrade with introduction of a "nick point" such as

a cattle trail. Tobosa swales are very broad sheetflow areas where, once nicked, the velocity of rainfall increases and changes the characteristics of the area. The grasses dehydrate and the whole area degrades rapidly. Tobosa is potentially an issue in the Lee Moore Study area and in Sahuarita.

Ann said that the COT has three ordinances, which address some parts of our riparian systems. The WASH ordinance was adopted in 1991. This addresses channelized washes where the floodplain was abandoned in terms of getting water but there was enough residual habitat that the COT felt that the former floodplain needed protection. The Environmental Resource Zone (ERZ) washes are also mapped and named. Ann mentioned the high number of ERZ washes in the HCP Planning Area. These are typically in natural condition connected to natural open space.

Ann referred to a map of all the watercourses in and around the COT limits. The floodplain ordinance addresses watercourse protection for any watercourse that exceeds 100 cubic feet per second of discharge in a 100-year flood event. She said that it takes about 17-acres of natural watershed and 12-acres of hardscape to induce that much flow.

For all of these ordinances, while there is an impetus not to disturb the riparian vegetation, ultimately, it is quite possible to disturb. If disturbance is planned, mitigation must be conducted. Ann referred to a diagram of the regulatory boundaries that trigger the COT's attention for the three ordinances. For Watercourse Amenities, Safety and Habitat (WASH) washes, this is determined by adding 50-feet to the top of bank. This area is called the "Study Area." If there is a proposal to encroach inside that Study Area, then COT staff will consult with the developer. For the ERZ and Floodplain ordinances, the 100-year peak flow boundary is used to induce regulatory attention. Ann said that even though this threshold triggers attention, it does not mean that one cannot do what one wants to do on her or his land. Within these areas, if one looked at the 100-year floodplain boundary and then drew the vegetation envelope inside, only those vegetated envelopes are considered for riparian habitat protection. Ann mentioned that there may be other restrictions based on floodplain encroachment that the COT's engineers will consider.

In 2006, a Development Standard – DS 9-06 – was drafted in an attempt to take the three separate ordinances, each with a different set of rules, and guide staff on how to interpret these. This was to improve uniformity in how applicants were dealt with. In the Development Standard, the Protected Riparian Area (PRA) is defined. Once one encroaches into the floodplain, one would need to prepare documentation consisting of 25 pieces of data such as wildlife potential, vegetation characteristics, and others. If one intends to remove vegetation in the PRA, then one needs to also submit a mitigation plan. This is all part of a negotiation process that involves the developer and COT staff from Development Services as well as the Office of Conservation and Sustainable Development. The informal goal of the process is to increase the diversity and density of the riparian system even if that doesn't necessary take place in the wash, such as if it occurs in a detention basin next to the wash. It has been a fairly successful negotiation process.

Ann referred to an example slide illustrating riparian protection. She mentioned that there have been various mapping exercises of riparian habitat that are referred to or estimated based on the latest aerial orthophoto. Trevor asked if this mapping takes into account the Tobosa. Ann said that it depends on if Pima County happened to map it or Frank Sousa happened to be the person

to create the vegetation envelopes, in which case he'd probably catch it. Tobosa, even though it is addressed in the ordinance as a protected riparian species, is something that the COT prompts the developers to quantify on their site.

Ann said that the RPAC will create a new draft ordinance that will consolidate the three ordinances, though it will not replace the Floodplain ordinance. The WASH and ERZ will probably be replaced by a riparian ordinance. At the same time, the RPAC will try to develop elements of the development standard at the same time. The ordinance is what the goal is and the development standard is how one does it. Development standards are long and detailed while ordinances are conceptual and short.

Ann said that the RPAC is reviewing the COT's Habitat Conservation Plan. For the Avra Valley HCP, the RPAC will provide informal comments and will provide formal comments for the Greater Southlands HCP. This is because the RPAC is the formal stakeholder advisory committee for the Greater Southlands HCP. She said that Jamie has been providing the RPAC with updates on the HCP process.

In terms of thoughts on the new ordinance to-date, Ann said that the RPAC is starting to subdivide the COT into wash categories of urban, suburban, ex-urban, and sheetflow. Urban washes are very linear and often channeled. Suburban washes have characteristics of urban and naturalized washes in the same area. Ex-urban washes haven't been significantly impacted yet. Sheetflow areas have no natural channel to begin with. This category was created specifically for the Southlands because of the unique conditions there.

Ann said that the RPAC is trying to balance hydrologic, ecologic, human, economic, and climate change goals. The washes perform many functions, and habitat is just one of these functions. Previous ordinances addressed these other categories and the new one will probably also. Climate change was previously addressed as heat island mitigation being one of the functions of the washes.

She said that the COT wants to get a net improvement in habitat quality and diversity, particularly in urban washes. She said that this may not take the form of revegetating an existing wash that may be cement lined up and downstream of an industrial site. Instead, it may focus on sites where good quality riparian habitat can be created. The notion of this being that, in the urban area, the COT is not trying to create habitat for medium to large mammals. The goal is to provide or maintain habitat for herps, birds and small mammals. Ann said that animals of this size don't necessarily need to run up and down the wash. If they see a good pocket of habitat in a detention basin, they could utilize it to fulfill survival and reproductive needs.

Ann said that the trouble with the urban areas is that the undeveloped lots often have washes running up the middle, which is why they are still empty. Ann said that unless flexibility is created for infill development, all the COT will get will be these remnant, urban, degraded washes full of buffelgrass, Mexican palo verde, desert broom, and trash. She said that it is almost better to say, "Okay, move that wash around the perimeter of your site, create a four to one side slope, do water harvesting, and install native plants to create a seedbank that will be benefit downstream areas." We want to balance enough detail in the ordinance and associated

development standard in case COT staff of the future, who may not be as win-win oriented, will have enough guidelines to proceed with flexibility and site specific solutions. Trevor said that it sounds good.

What species the RPAC is trying to create habitat for is something that they could use guidance on from the TAC. There is no language about this in the existing ordinance or development standard, it is just “habitat.” One approach would involve asking Audubon Society staff members “What are your threatened bird species and what vegetation in a riparian area would you recommend focusing on to support these species?” This would be much more targeted than what is currently done.

Trevor mentioned Phil Rosen’s urban watercourses and frogs, fish and toad report and proposal. He said that it is a good source for the herps. Ann added that Tucson Audubon Society is currently focusing more efforts on urban birds and urban bird habitat. Therefore, there are experts in the community that the RPAC can rely on. Ann said that COT personnel are aware of migratory corridors for wildlife and, to the extent possible, RPAC members have expressed a desire to maintain these corridors where there is a connection to two open space areas. Fortunately, the regional watercourse corridors – Rillito, Pantano, Tanque Verde, and Santa Cruz Rivers – will be maintained. The Atterbury Wash system is also an important corridor that has received a lot of focus.

Ann said that the new ordinance needs to allow trade-offs between preservation and impacts. She said that COT staff would like to start an in-lieu mitigation process. These are concepts that have been discussed, but none have been “put in stone.”

In terms of implications for the Greater Southlands HCP, Ann mentioned the Lee Moore Study flow corridors that the TAC has seen. COT staff members attended Lee Moore Study meetings for the creation of the Rules of Development. Ann said that the “punchline” for the flow corridor concept is that it involves focusing on major wash systems and ignoring other systems. Particular wash corridors will be maintained and boundaries drawn around them. These boundaries do not correlate with the 100-year floodplain. In terms of the regulations for lands outside the flow corridors, but within the 100-year floodplain, Ann said that this will depend on the jurisdiction. She added that she didn’t know what the implications will be for adoption of the flow corridors. For example, she wondered if adoption means that one can assume that lands outside the flow corridor are developable and the wash corridors can be channelized and lined with concrete or pipelined. This is why there is a need for a lot of community input on the Lee Moore Study. Currently, for these lands in the Lee Moore Study area and within the COT limits, the 100-year floodplain at 100 cfs prompts regulatory attention. Yet, there is an understanding that the Southlands is a future growth area. So, TAC input on priority areas for preservation would be helpful for the RPAC. She wondered if TAC members are comfortable with focusing on the flow corridors for preservation and allowing impact on the other washes.

Ann said that the RPAC seems to be agreeable to continuing the conversation on trade-offs. They appreciate any TAC guidance so that the RPAC doesn’t propose something inconsistent with the ecological needs of the HCP covered species. The RPAC not only needs to consider TAC input,

but also input from a flood control perspective, and that of the Arizona State Land Department, transportation studies, and other factors.

Ann wondered what would happen upstream and downstream of a flow corridor, where a large development goes in. That is, she wondered how a distributary watercourse would be hemmed in and then hemmed out. In terms of stewardship and maintenance of the washes, which entity will do this is unknown. Ann said that the COT does not have any funds for this, yet, developers often want to deed their washes to the COT.

Specific questions to the TAC included:

- What species should riparian habitat be focused on in the Southlands
- What riparian habitat preservation is needed for these species?
- Is buffer area beyond riparian vegetation needed? Why?
- How does TAC feel about trade-offs between preservation and impact?
- What watercourse goals besides wildlife habitat are important?
- What on-going coordination is needed between RPAC and TAC?

In terms of buffers, Trevor said that studies on amphibians suggest that an approximately one kilometer buffer from the edge of riparian vegetation is necessary because of the terrestrial portions of their life cycle.

Dennis wondered if it has to be all or nothing. He wondered if important areas along one or more of the wash corridors that are greater in value for herps could be identified so that a 1000-meter buffer could be implemented as Trevor suggests. He wondered if it has to be consistent along the entire watercourse because some sections of the watercourse may not be as good for herps. He asked if it is possible to prioritize along the corridors where there would be an undulation. Some sections might require 1000-meter buffers and others just 50 feet.

Leslie said that it is difficult to do things this way because the people who have to comply with these ordinances are not biologists. They may hire biologists to help them. But, when dealing with lengthy development standards that took many months to write, the key comes down to being streamlined and straightforward because staff has to figure out how to implement it. She asked how one would judge where the undulations should be. Dennis said that the TAC talks about variations in zones for different species and important biological areas and now we are refining that to be more specific. He said that TAC's job is not to tell COT staff what is easy but to suggest what we would ideally like to see. Leslie said that the key is going to be giving staff an easy way to address these issues. Trevor said that master planning is one way to address it and the other is site-specific issues. Leslie agreed and said that the COT cannot just say, on a site-specific basis, one needs to address amphibians. The developers will ask how and so there needs to be clear, firm guidelines. Leslie said that this is problematic for environmentally sensitive roadway design because this is so species-specific. She said that COT staff cannot get into a scenario where the developer is asked to address all the species potentially using the site. Leslie said that she is not saying that it can't be done, it just needs to be a clear and well-articulated process for it to be integrated into the ordinance or development standard.

Dennis wanted to clarify that, for example, the wash near Trevor's home might be "toad heaven" and we want to protect "toad heaven." So, that area might need some special considerations and so he would apply that way of thinking to the Southlands and determine which parts are "toad heaven" that need special attention. Leslie said that she understands what Dennis is saying, but that she needs to know how one identifies what "toad heaven" looks like.

Jamie asked if focusing discussion on amphibians in general is within the scope of the TAC's work for the 14 covered species as part of the HCP. Trevor said that when talking about the ecology of a riparian area, it doesn't stop at the dripline of a mesquite tree. There are energy flows between the uplands and riparian areas and so the TAC needs to take those issues into account because they will impact the covered species. If there are not snakes eating the toads and there are not pygmy-owls eating the snakes, then we are impacting our covered species. Trevor said that the selling point to the private property owners is that there is a connection between the uplands and the riparian areas. We need to protect some balance there and allow the developer to do what he or she wants to do because it is private property.

Guy said that the other answer to Jamie's question is that, "We are being asked," which is why we need to answer it. He added that the answer is that "It depends" because it is an ecological question.

Ann said that she anticipated that the TAC would provide information related to the HCP covered species. For example, if a site has good Desert Tortoise habitat or desert tortoises have been known to occupy the site, COT personnel have required some developers to survey for the species. On the West Branch of the Santa Cruz River, near the main trunk where Phil Rosen's report identifies the presence of herps, COT staff members have asked the consultants to talk with Phil. This is very site-specific response and, unless COT personnel have prior knowledge that prompts staff to make these requests, we are not going to do this. Ann said that as part of Watercourse Environmental Resource Reports, there is a requirement to request a report from the Arizona Game and Fish Department's Heritage Data Management System. If the AGFD suggests that the site is good Burrowing Owl habitat, we may request that a survey be done. This is not the case for less vulnerable species such as coyotes or javelina. So, Ann said that even if the TAC provides guidelines, the RPAC may not fully constrain the ordinance or development standard to those. But, if we have more things to be sensitive to, it gives us a place to start.

Ann used the example of where a site is known to have deer and the developer is asked to install the appropriate culvert size. The developer then says that he or she asked AGFD for guidance and none was provided. In addition, they may say that Tucson Water installed a culvert upstream that is only three feet in diameter so why should she or he be required to install a culvert six feet in diameter. She said it is those "nitty-gritty" details about how someone is going to build something that would be helpful. Ann said that, by the way, if a culvert big enough for deer is built, then a lot of the habitat for other species is destroyed in the process because of the necessary approaches.

Rich said that the discussion is the bottom line of the whole planning process. If there are 100 important toad areas in the planning area, it might be imperative that at least 10 of them be maintained to keep a toad population that is viable. But, we don't know where they are and we

are planning for these areas without visiting each acre. Because of this, development may wipe out a million toads and other wildlife that are probably very important, but there are site specific populations that may be core areas, the loss of which would preclude presence of organisms in the surrounding areas. With regard to the toads, it might be an acre or half-acre that is important. We don't know now where these are because our broad-brush approach is just too coarse of an analysis.

Leslie said that the dilemma is that we want things to be done on a large scale because we want things to be addressed with the big picture in mind. If someone comes in with a 12,000-acre master plan, they will not have surveyed every square inch of the property. Leslie said that we want to do master planning, but it is cost prohibitive to do that half-acre study. When one does master planning, there are some entitlements that come with it without having that detailed information. This detailed information isn't gathered until further into the process when you are talking about a smaller project. Leslie said that you can talk about a master-planning project for 12,000-acres, but the actual project that comes in is only about 100-acres and it has a frog hollow on it. Yet, we don't know how that frog hollow compares with all the other acres. Chances are, we will never have that information. That is the difficulty of doing things at the large scale, coupled with the resistance to give up on anything. Where we end up is that we need to make some best guesses and accept that we will win some and we will lose some. But, if we can't come up with an approach that makes sense at the large scale, Leslie said that she thinks we have lost.

Ann said that one thing to remember is that the Conservation Lands System will reserve a lot of land. The RPAC is anticipating the portions of the Greater Southlands will be a development area and that is how the ordinance will be unfolded. The question is "How will it happen in a way that preserves as much as we can with as much diversity as we can and still make development possible?" All we need to know is what specifics need to be included so that both development and preservation are possible. Ann said that the more times that people see the Lee Moore Study flow corridors, the more attached they will get to the concept. Trevor asked if TAC members could review the 25 data points required of a Watercourse ERR as part of Development Standard 9-06. Perhaps there's a simplified, yet robust way of doing ecosystem analysis on a property. *[Action Item: OCSD staff will distribute the elements required of Environment Resource Reports per Development Standard 9-06]*

Trevor said that there are 10 species of toads in the Greater Southlands that breed together, which is an amazing natural phenomenon that rarely happens anywhere else in the world. But, again, it is the ecosystem approach in that riparian areas are attached to upland areas and we need that bigger view of riparian areas and how they function in terms of watershed health. These are issues we are not getting to because of the HCP process, coupled with the fact that this is a growth area.

Ann mentioned an area near where she once lived in Sahuarita that was both a toad hollow and a mosquito breeding site. This is where proximity between development and urban wildlife habitat can pose health concerns.

With regard to the HCP Covered Species, Rich said that Pima Pineapple Cactus is not a riparian species. Leslie said that only 10 percent of M. Baker's PPC points occur within the modeled floodplains. Trevor said that people think that just because there are many creosote flats in the HCP Planning Area that it is poor habitat, which isn't the case. He wondered if the informal designation of the area as the future growth area could be revised. Leslie said that a forthcoming City of Tucson/Pima County water/wastewater infrastructure study will provide a more detailed look at future growth in the region. This is based on a modeling exercise of 10 or 15 different factors and trying to anticipate where growth is most likely to occur and integrating this with water planning. Hopefully, after this exercise, the TAC and others will have a much better idea of where development is likely to occur.

Ries recommended forming a TAC subcommittee to answer Ann's questions. Then we would have something to talk about instead of debating about things we don't know anything about. Trevor said that he needs an understanding of what the Lee Moore Study says in order to answer the questions. Ann said that the document is under Pima County internal review at this time and is anticipated to be released later this year for public review.

Dennis said that he would like to flip the questions around and asked what the development community would ideally like to see in these areas. What buffers would the development community need to get what they want? Having a knowledge of this would help the TAC get a better sense of the reality out there. He wondered if it is possible to develop parameters for this. David said that, when the time comes, it will be market driven. Dennis wondered if there are similar projects that have occurred in similar areas. David said that Dennis could look at the assumptions made in Marana and Oro Valley and try to overlay those, but he didn't know how realistic this would be. Dennis said that he wanted to focus on the riparian corridors and wanted to know how these would be treated.

Ann said that what she hears from the development community is that they would like some certainty before the land is purchased so that they know what rules apply. The more certainty, the more comfortable they are in making these investments. Another thing COT staff hear is the desire for maximum developable area. She said that ASLD wants this, given their mission. David said that there are some developers who only think in terms of retirement golf communities and there are others who think cluster developments with open space are the best way to make money. So, it is hard to generalize.

Leslie said that they COT Land Use Code really only encouraged suburban density and the COT doesn't have an infill, urban-friendly code. She said this may change. If so, development densities in the Southlands may be higher than anywhere else in the COT, but whether or not that will happen is unknown. The best one could do is look at projects large enough where there could be good riparian buffers. The key is the given market. There are existing projects that have good buffering, but they are also high-end developments. Leslie wondered if that is going to be the major market in our growth areas or if the area will feature more moderate cost development and more densely developed areas with functional open space. This is a major debate in and of itself. Leslie said that one of the things COT personnel are trying to do this year is work with all of the climate change folks at the University of Arizona and compile a vision for what a carbon-free community would look like in the desert southwest. The group is split, with one group

advocating for a dense urban land form incorporating alternative forms of transportation and making up for the additional population with renewable energy supplies. On the other end of the spectrum are those who think that the overall footprint isn't an issue except for carbon emissions. And, if one can electrify the transportation system using renewable energy, density isn't as much of a factor. This group thinks that it would be better to have a less dense urban form in terms of the urban heat island and quality of life.

Jamie said that he agreed with Ries and that this is part of the exchange between the TAC and RPAC. The TAC's role is to provide biological input and recommendations. Ultimately, it will be the U.S. Fish and Wildlife Service that evaluates the HCP. In terms of the trade-offs between site-specific issues and large scale planning, Jamie said that from what he has heard, USFWS staff will evaluate HCP impacts and mitigation quantitatively and we will need to know these amounts up front.

Jamie referred to maps that he created that display the Lee Moore Study floodplains and flow corridors along with the modeled habitat for the Pale Townsend's Big-eared Bat (PTBB) and the Cactus Ferruginous Pygmy-owl (CFPO). In terms of the CFPO modeled dispersal habitat, Leslie mentioned that Scott Richardson (USFWS) informed the model by indicating where, in the northern and western portions, the conditions were not suitable. She said his decision was influenced by proximity to I-10 and quality of vegetation.

Jamie showed a map with the CLS IRA and the flow corridors, noting that there are areas where they do not align. Trevor said that the Lee Moore Study uses more current data. Leslie said to keep in mind that in those areas in the northern area, the modeling was only done for the 1000 cfs discharge, not the 100 cfs discharge. Jamie then showed a map of the floodplains and the CFPO and PTBB habitats and noted that a considerable amount of land is outside the modeled floodplains. Trevor asked if mesquite bosque occurs on floodplains or on the edges of floodplains. Lin said on floodplains. Leslie added that they occur on the fringes of floodways.

Jamie said that he wanted to get TAC member input on the Lee Moore Study concepts described at the April 1 TAC meeting and whether or not the modeled floodplains or flow corridors could or should be incorporated into the HCP. Leslie said that, in looking at the cross sections of the floodways, it looks like they will be pretty well developed. She said that it sounded like the floodways would be left undisturbed to carry the 10-year flow but they are not being preserved in terms of protecting riparian habitat. It will be a grassy, pervious corridor with additional functionality in terms of trails and recreation fields that might get flooded a few days of the year. The way she interpreted it was that the flow corridors would be preserved but not necessarily any natural habitat. Rich said that his understanding is that the flow corridors need to address liability and that is all. Trevor wondered if everything outside the flow corridors is being "written off" as hardscape or whatever needs to be done for development.

The group discussed the schematics from the Lee Moore Study presentation. Trevor mentioned going back to Dennis' suggestion of considering constraints and he wondered if the TAC could engage in a thought exercise in which 50 percent of the flow corridors and 50 percent of the uplands are protected. Trevor said that 50 percent of the landscape has to be natural, undisturbed open space without any recreation. The bottom-line, from a biological perspective, would

involve giving up 50 percent of the landscape while the other 50 percent would be protected as functioning landscape across the HCP Planning Area. Rich asked how Trevor knows that preserving 50 percent would provide ecosystem functionality. Trevor said he had no idea but that this would be a starting point. Leslie said that Trevor can throw that out, but politically, no one is going to touch it until we know better what build-out will be and what will come out of the water/wastewater study.

Rich commented on the flow corridors and how the increased volume diverted to these areas would likely cause erosion and uprooted trees. Jamie said that his understanding is that development adjacent to these flow corridors would be required to do on-site detention. He added that he thinks Bill or John said that area between the edge of the flow corridor and the edge of the floodplain does not contain very much volume, relatively speaking, because the flow corridor can only raise the water level by a maximum of one foot. Trevor said that there is a difference between the height of the water and the speed of it. Ries said that the size of the footing in the schematic may be indicative of what erosion potential Pima County is planning for through these flow corridors. He said that the footings in the schematic are pretty deep.

Trevor said that referring to the water/wastewater study in terms of expected growth is a good idea. Then, the TAC can start thinking about the percentages of set-aside. Trevor recommended that the TAC treat the entire area as CLS Multiple Use with 66.66 set-aside. Trevor said that the Town of Marana, through its draft HCP, is allowing between 40 and 70 percent set-aside and that if developments don't achieve 70 percent, then mitigation is required. If we consider this approach, then we can go back and evaluate each wash in terms of which should be protected.

Leslie suggested looking at the flow corridors as an opportunity to do a little bit of selective restoration/planting. This would be to create habitats that are going to be more beneficial in the long run and maintain some of the functionality. She said that one of the things that COT staff discussed with USFWS staff was whether or not these flow corridors could serve as PPC pollination corridors. This would connect areas that have PPC by having a certain plant palette along the corridors.

Trevor said that at the last TAC meeting, uplands were discussed as being the PPC pollination corridors and the washes were considered the seed dispersal corridors. Leslie said that she thinks that corridors could be made into whatever they need to be. Trevor said that one cannot put cacti into a wash system because of the shallow root systems. Leslie agreed and said that a condition of adopting the flow corridors may be a set of criteria, such as an upland buffer on either side of the wash bank. She wanted to emphasize that these flow corridors could be viewed as opportunities.

Greater Southlands HCP and Pima Pineapple Cactus (PPC)

Leslie said that COT staff met with Mima Falk (USFWS) and Marit to discuss ideas based on existing information available and how it could be used in a productive fashion to formulate a more structured PPC conservation strategy. Leslie said that the PPC map discussed at the previous TAC meeting involved excluding the Lee Moore Study floodplains, lands outside of the PPC range, and lands with a slope 15 percent or greater. These were considered unlikely PPC habitat areas. Leslie said that the meeting with USFWS staff began by discussing that map in

terms of what about it works and what doesn't. The discussion focused on the higher/lower value approach and trying to delineate areas that seem to have greater habitat quality and value overall. Leslie said that the northern area within the PPC range was identified for exclusion as a PPC habitat area. One reason was because the Houghton Road Corridor area within the PPC range underwent a two-protocol, pedestrian PPC survey, which amounts to walking the entire site. Leslie said that this 4,000 acres had no PPC. Trevor disagreed and said that there are PPC there and that he thinks the surveyors missed them. Leslie said that Marc Baker also surveyed transects in this larger, northern area and observed only two PPC, neither of which were in the Houghton Road Corridor planning area.

Trevor said that, at the last meeting, TAC members requested HDMS data. Jamie said that these data were requested but that he had not yet received a response. Marit said that AGFD staff responded to her and that Jamie should expect a response from AGFD later in the week. Leslie said that the COT could not request the information without landowner permission. But, information that involved an ESA Section 7 consultation with the USFWS could be shared with the COT if granted permission by the USFWS.

Leslie said that, with the newest PPC conservation map, floodplains were designated as lower value PPC habitat. Flow corridors were not included in the low/high value distinction because they are seen as an opportunity, such as possible pollinator or seed dispersal corridors. Jamie said that he isolated parcels one acre or less in size as part of subdivisions and labeled these areas as unlikely PPC habitat. Leslie said that subdivided parcels not part of a platted subdivision were considered to be lower quality habitat because it would be difficult to enforce habitat protection in these areas. Leslie said that what remained were lands considered in the mapping exercise as the best PPC habitat in the area.

Leslie said that the gist of the conversation with Mima was that the western side of the planning area did not seem to have a viable PPC corridor any longer. Therefore, the idea was whether or not the COT's Native Plant Preservation Ordinance (NPPO) could be used to generate a revenue stream in the western portion of the HCP Planning Area for mitigation elsewhere in the HCP Planning Area. The other idea was to involve the Arizona State Land Department and, in exchange for more streamlined compliance with NPPO and PPC requirements in the western half, engage in a Transfer of Development Rights or some kind of mitigation banking concept. Leslie said that Mima indicated that Conservation Lands System (CLS) compliance in the southeastern areas may not be adequate protection, even though lands undergoing rezonings would require 80 percent set-aside.

Leslie said that another part of the conversation with USFWS staff involved discussing possible PPC reserve locations. She said that the only possible reserve location identified at the meeting is along the southern border of the HCP planning area, adjacent to the Santa Rita Experimental Range (SRER). However, these lands contain some "lower value" PPC habitat as part of the floodplains and very few PPC were observed there during Marc Baker's survey. But, from a connectivity perspective, Leslie said that these are important lands for PPC.

Leslie asked the TAC if they could first agree upon the western portion not being a viable corridor. Secondly, she asked the TAC where it makes sense to locate reserves and what are the

criteria for these reserves. She asked if another PPC survey should take place in these key locations to get confirmation that a reserve in the area makes sense. Marit added that large areas with higher PPC density were mentioned as possible areas for reserve consideration.

Trevor said that he disagrees with the assertion that the western portion is no longer part of a viable PPC corridor. One reason is because the Swan Southlands used to be a PPC mitigation bank before it was sold. He said that Tohono O'odham Nation lands on the west side of I-19 play a role. Leslie said that the connection across the Tohono O'odham Nation land is unknown. She said that the connection was known to be north of Tohono O'odham Nation lands. Dennis asked if "connection" could be defined. Leslie said that the PPC connection comes down to the pollinator distance and there needs to be the ability of pollinators to move through the landscape.

Leslie asked if it makes sense to split efforts and have two areas divided by dense development or should one area be sacrificed for better conservation elsewhere. Trevor said that he doesn't mind "horse trading" but one can't compromise before one starts "horse trading." Leslie said that the flow corridors could be used for PPC transplant sites that have to be displaced because of development. This would ensure that there are other cacti nearby that are important for PPC.

Trevor mentioned the Swan Southlands and said that he thinks they were close to reaching their set-aside needs for Important Riparian Areas a year-and-a-half ago so the PPC connection through the Swan Southlands would still be there. Trevor said that he is basing his opinion on Pima County's Priority Conservation Area for the PPC, where there is a big "doughnut" around the Sierrita Mountains. And, he said that he and others have been arguing with Pima County about their giving up on this northern half.

Rich said that instead of thinking about it as splitting one's energy, the issue can be looked at as increasing options. He said that the TAC should leave options open as opposed to considering the western corridor "nuked." Marit said that the USFWS does not have evidence that PPC do well in developments and so the USFWS would encourage establishment of large set-asides. Then, the question in the Greater Southlands is where efforts should be focused to maximize the benefits of large set-asides. Then, she said we need to consider trade-offs and perhaps that was premature and we need to go back and think about where the large areas should be located.

Trevor said that where development will go is also a factor. Leslie said that, based on the conversations she has been a part of, development will likely start in the areas closest to the freeways and existing COT limits. One example is the Houghton Road Corridor area.

Marit said that ASLD needs to be a part of this discussion. Trevor said that we know when the housing industry rebounds, they were talking to ASLD about large mitigation banks in the Greater Southlands. Negotiations have stopped because they don't need any mitigation. Marit asked who "they" are and Trevor said that David Jacobs knows. Leslie said that ASLD staff has been in conversation with the USFWS about conservation banks, but, to her knowledge, the emphasis had been on the Altar Valley.

Leslie said that her point is that, given the scenario here, preservation of the large area adjacent to the SRER is equal to losses in the western portion. Guy asked if Leslie could estimate the

timeframe for development of the northern lands and what the funding mechanism is for establishing the set-asides. Leslie said that possibilities for establishment of the set-aside would be Transfers of Development Rights or a lease scenario. In exchange for development in the certain areas, the ASLD could possibly establish 99-year leases similar to the SRER, but this all depends on the willingness of ASLD to consider this. In terms of the build-out timeframe, Leslie said that two years ago, her response would have been 20 years, but now she would say longer than that.

When asked about the acreage of the lands adjacent to the SRER, it was roughly estimated at 3,000 acres. Trevor said that the standard endangered species mitigation of 4:1 would allow the ability to develop 900 acres in exchange for this 3,000 acres. Leslie said that the standard in the USFWS biological opinions is 1:1 mitigation for PPC. Trevor said that he didn't like that for an endangered species, even though it is a plant. Even at 1:1, Trevor asked if that would provide coverage for the Southlands and Leslie said no. He said that before the map is shown to developers, it needs to have three or four more 3,000-acre reserves. Marit said that this is a preliminary discussion draft map only.

Jamie asked if other TAC members had comments. Rich said that he was thinking about the flow of soil and, as he recalls, PPC occurs in some areas where there is active soil movement. Trevor said in geological timeframes, "yes." Trevor added that there is soil movement during sheetflow, but not much. Marit said that Marc Baker had found PPC in unlikely places, such as active wash channels. Rich said he was not talking about wash bottoms but where there is gentle bajada outside the riparian area. He was just wondering because all of that land in the far northwest corner is basically downslope of lands outside the HCP planning area to the east (Swan Southlands). The hydrology of these areas is going to be drastically altered by development outside the HCP planning area, which might wipe out PPC on the sheetflow areas downslope. Trevor said that this would depend on what Pima County requires of flood control and that conditions might actually be better for PPC in the area.

Leslie asked Amanda if the Swan Southlands had been approved and she said yes, but the project is on hold. Amanda said that the plan for build-out was originally twenty years, but building was supposed to begin three years ago. She said that nothing had broken ground yet. Trevor said that if Don Diamond anticipates a 20-years build-out, and he is probably the smartest land developer in the area, that gives a pretty good indication of timeframes.

Jamie said that one thing that surprised him when putting together the latest PPC map is the amount of development or subdivision platting that has already occurred in the HCP Planning Area. He recalls a lot of TAC discussion about protecting lands of the "Backwards L" – the southern and eastern portions of the planning area. But, Jamie said that by looking at the COT and Pima County GIS parcel layer, the landscape is much more developed and fragmented than he thought based on TAC discussion.

Trevor said that he agreed that the TAC cannot count on PPC inside developments as conservation, but the TAC can count on lands inside developments for pollination and connectivity. So, these subdivisions don't necessarily preclude a PPC reserve adjacent to the SRER or one to the east. Marit said that that was discussed in the meeting with COT staff, where

there would be a focus on these large reserves and then corridors between them. Leslie said that the flow corridors would be the PPC connectivity corridors. Trevor said that he liked the idea of a preserve in the far eastern edge because it would preserve both PPC and Needle-spined Pineapple Cactus habitat.

Jamie indicated on a map the location of a proposed Pima County mountain park in the southeast corner of the HCP Planning Area, which is part of the Eastern Pima County trails master plan. Leslie said that ASLD, in their conceptual land use planning discussions, had identified that southeastern corner as a resort location, where there would be a small amount of impact and a lot of open space. Jamie said that David Jacobs mentioned this at the April 1 TAC meeting and said the resort designation would be something akin to the Dove Mountain development at the base of the Tortolita Mountains. *[Action Item: Jamie will e-mail the Discussion Draft PPC Conservation Map to TAC members and Mima Falk for their review and feedback]*

5. Upcoming meetings

The next meeting is scheduled for May 20.

6. Call to the Audience

There was no response from the audience.

7. Adjournment

The meeting was adjourned at 4:00 p.m.

Summary of Action Items:

- OCSD staff will distribute the elements required of Environment Resource Reports per Development Standard 9-06
- Jamie will e-mail the Discussion Draft PPC Conservation Map to TAC members and Mima Falk for their review and feedback